CLAIMS

1. A method for modifying a procedural map for use with a tree driven procedural map comprising a plurality of levels (at least two levels) each having at least one node associated to at least one parameter, comprising the steps of:
   - providing a node selection tool allowing the selection of at least one node of one level among the plurality of nodes of a map to be modified;
   - select a given node according to a given input;
   - provide a parameter modification tool allowing the modification of at least one parameter of the selected node;
   - modify said parameter of said node based on a given input;
   - calculate a modified map based on the modified parameters.

2. The method of claim 1, wherein the modified parameters are recursively affected to the children nodes of said selected node.

3. The method of claim 1, wherein the tree driven procedural map is represented by the following equation:

$$\sum_{(j,k)\,\epsilon T} F\,(2^j x - k)$$

wherein:

-F is a function $R^n \rightarrow R$

-x is a vector of the type $(x_1, x_2, \ldots, x_n)$;

-T is a tree comprising nodes (j , k) and wherein

-j indicates the current level, among a total potential number of levels jmax (j ϵ (0, 1, 2, ..., jmax)

-k is a displacement vector for each node N and of the type $(x_1, x_2, \ldots, x_n)$

4. The method of claim 3, wherein the modifiable parameters are selected in the list comprising: the morphlet F, the maximum number of levels (jmax).

5. The method of claim 3, wherein said procedural map is a texture map.

6. The method of claim 3, wherein said procedural map type is selected from the list comprising: displacement, bump, reflectivity, specularity, ambient color, diffuse color, specular color, transparency, color, shininess, self-emission, anisotropy, refractive index.

7. The method of claim 3, wherein the tree comprises an intermittency parameter (p).In a further variant, the tree may also comprise a displacement parameter (D).

8. The method of claim 3, further comprising a Hurst parameter (H), (for instance a roughness value).

9. The method of claim 3, further comprising a random value (ξ).

10. The method of claim 3, wherein the sum is a generalised sum.

11. The method of claim 3, wherein the map is time dependant: any, or all parameter may be time dependant.

12. The method of claim 1, wherein the tree driven procedural map is represented by the following equation:

$$\sum_{(j,k)\epsilon T_{D,p}} 2^{-jH} F(2^j x - k)\, \xi_{(j,k)}$$

wherein:

-F is a function $R^n \rightarrow R$

-x is a vector of the type $(x_1, x_2, ..., x_n)$;

- $T_{D,p}$ represents an tree provided with an intermittency parameter (p), and comprising nodes (j , k) and a displacement value (D), wherein

-j indicates the current level, among a total potential number of level jmax (j ϵ (0, 1, 2, ..., jmax)

-k is a displacement vector for each node N and of the type $(x_1, x_2, ..., x_n)$

-H represents a Hurst parameter, for instance a roughness value;

-ξ represents a random number.

13. The method of claim 12, wherein the modifiable parameters are selected in the list comprising: the morphlet F, the maximum number of levels (jmax), a Hurst parameter (roughness value) (H), a random number (ξ), an intermittency parameter (p), a displacement value (D).

14. The method of claim 12, wherein said procedural map is a texture map.

15. The method of claim 12, wherein said procedural map type is selected from the list comprising: displacement, bump, reflectivity, specularity, ambient color, diffuse color, specular color, transparency, color, shininess, self-emission, anisotropy, refractive index.

16. The method of claim 12, wherein said sum is a generalised sum.

17. The method of claim 12, wherein the map is time dependant.

18. A software product readable by a computer and encoding instructions for executing the computer process according to any one of preceeding claims.

19. A procedural map modification tool for use with a tree driven procedural map comprising a plurality of levels each having at least one node associated to at least one parameter, comprising :
    - ❖ a node selection tool allowing the selection of at least one node of one level among the plurality of nodes of a map to be modified;
    - ❖ a parameter setting tool allowing the modification of at least one parameter of the selected node;
    - ❖ a processing unit, for the processing of said parameters to generate a map;
    - ❖ operating instructions, for the operation of said tool and namely of the processing unit.

20. The tool of claim 19, adapted for the modification of a tree driven procedural map represented by the following equation:

$$\sum_{(j,k)\,\epsilon T} F(2^j x - k)$$

wherein:

-F is a function $R^n \rightarrow R$

-x is a vector of the type $(x_1, x_2, \ldots, x_n)$;

-T is a tree comprising nodes (j , k) and wherein

-j indicates the current level, among a total potential number of levels jmax (j ϵ (0, 1, 2, ..., jmax)

-k is a displacement vector for each node N and of the type $(x_1, x_2, \ldots, x_n)$

21. The tool of claim 20, being adapted for the modification of at least one parameter selected in the list comprising: the morphlet F, the maximum number of levels (jmax).

22. The tool of claim 20, wherein said node selection tool is provided with a "deepness" selection unit allowing the selection of a given level (j) of said tree.

23. The tool of claim 20, said node selection tool comprising a movable screen target, for the localisation and/or selection of a node-object.

24. The tool of claim 23, wherein said movable screen target is operable with a computer cursor displacement device.

25. The tool of claim 19, adapted for the modification of a tree driven procedural map represented by the following equation:

$$\sum_{(j\,,\,k)\epsilon T_{D,p}} 2^{-jH} F\,(2^j x - k)\,\xi_{(j\,,\,k)}$$

wherein:

-F is a function $R^n \rightarrow R$

-x is a vector of the type $(x_1\,,\,x_2\,,\ldots.,\,x_n)$;

- $T_{D,p}$ represents an tree provided with an intermittency parameter (p), and comprising nodes (j , k) and a displacement value (D), wherein

-j indicates the current level, among a total potential number of level jmax, j ϵ (0, 1, 2, ..., jmax);

-k is a displacement vector for each node N and of the type $(x_1\,,\,x_2\,,\ldots.,\,x_n)$;

-H represents a Hurst parameter (for instance a roughness value);

-ξ represents a random number.

26. The tool of claim 25, being adapted for the modification of at least one parameter selected in the list comprising: the function F, the current level (j), the maximum number of levels (jmax), a Hurst parameter (H) (roughness

value), a random value (ξ), an intermittency parameter (p), a displacement value (D).

27. The tool of claim 25, wherein said node selection tool is provided with a "deepness" selection unit allowing the selection of a given level (j) of said tree.

28. The tool of claim 25, said node selection tool comprising a movable screen target, for the localisation and/or selection of a node-object.

29. The tool of claim 28, wherein said movable screen target is operable with a computer cursor displacement device.

30. The tool of claim 25, said map modification tool being comprised in a tree driven procedural map generation tool.

31. A procedural map generation tool, for the generation of tree driven procedural maps comprising a plurality of levels each having at least one node associated to at least one parameter, comprising:

- ❖ a map parameter input unit, for the input of the procedural map parameters;
- ❖ a map processing unit, for the processing of the parameters, (to obtain a map);
- ❖ operating instructions, for the operation of said tool and namely of the processing unit;
- ❖ a map modification tool, comprising:
  - a node selection tool allowing the selection of at least one node of one level among the plurality of nodes of a map to be modified;
  - a parameter modification tool allowing the modification of at least one parameter of the selected node.

32. The procedural map generation tool of claim 31, further comprising an output for a map display unit, allowing the presentation of said map on a display.